

# RECOMMENDATIONS ON DISINSECTING AIRCRAFT WITH PERMETHRIN

Residual treatments with permethrin (25/75 cis:trans ratio) have recently been included in the WHO recommendations for the disinsecting of aircraft.<sup>1</sup> A procedure for residual disinsection of aircraft with permethrin has been developed in New Zealand, where the need for this type of disinsection is particularly great. The procedure outlined below aims at producing an even deposit of 0.5 grams permethrin per square meter on carpets and 0.2 grams per square meter on other interior surfaces. Aircraft that have been treated previously at this rate can be treated subsequently at 0.2 grams per square meter on carpets and 0.1 gram per square meter on other surfaces.

## Spray material

A 2% emulsion of permethrin is prepared by mixing the required amount of emulsifiable concentrate (EC) with distilled water (e.g., two parts of 40% EC with 38 parts of distilled water). Trials show that about 25 liters of 2% emulsion are required to treat the passenger and cargo spaces of a Boeing 747B aircraft, about 16 liters for a Douglas DC10, and about seven liters for a Boeing 737.

## Equipment

Satisfactory results have been achieved using a pneumatically driven compression sprayer with a one-liter cylinder and a universal F7 nozzle delivering about 300 liters of air per minute at a pressure of 690 kPa (100 p.s.i.). One operator using this equipment could treat a Boeing 747B aircraft (passenger and cargo spaces) in about two hours. Alternatively, four operators treated a Boeing 747B in one hour using five-liter capacity, hand-operated compression sprayers with flat fan-type nozzles, Specification No. 01-F80, delivering 5 ml per second at a pressure of 104 kPa (15 p.s.i.). All electrical equipment used on board or in the vicinity of the aircraft must comply with the relevant fire and safety standards.

Two per cent permethrin in a totally freon-based aerosol can be used to treat electrically sensitive areas such as the flight deck.

<sup>1</sup> See World Health Organization, *Weekly Epidemiological Record* 60(7):45-47, 1985 and 60(12):90, 1985.

## Method

Whichever equipment is used, it will need to be operated in such a way that it deposits the required amount of permethrin evenly over all surfaces of the passenger, crew, and cargo compartments. This can be achieved by measuring the output per second of the spray equipment (using an ordinary measuring cylinder) and then adjusting the rate of operation so as to cover a measured area of surface in the required time. For example, the 2% emulsion needs to be applied at the rate of 10 ml per square meter to deposit 0.2 gram of permethrin per square meter. If the spray equipment is adjusted to deliver 10 ml per second, the correct deposit will be achieved if spraying is carried out so as to cover one square meter per second. To ensure even coverage, it is best to practice on a suitable flat surface (e.g., glass) where the spray pattern can be seen easily.

The aim is to achieve an even pattern of close droplets on all surfaces, not necessarily to achieve total cover, and certainly not to produce runoff.

## Treating an aircraft

Prepare the aircraft by opening and clearing all lockers, cupboards, storage units, etc., and drawing all curtains and window-blinds. Remove carpet covers if present.

Spray all surfaces of the passenger, crew, and cargo compartments, including ceilings, walls, lockers, curtains, carpets, etc. Spray toilets, galleys, and wall areas behind curtains. Spray both sides of doors and locker lids. At the end of the operation, respray the carpets. After spraying is completed, air-conditioning packs should be run for at least an hour to clear the air of the volatile components of the spray. Mirrors and some other surfaces may need to be cleaned of spray deposit. The treatment should be repeated so as to replenish the insecticide film whenever it is wiped off or loss of biological efficacy is shown by bioassay tests, but in any case the plane should be completely resprayed at intervals of not over four weeks.

It is desirable that replacement carpeting and seat covers should be treated at the appropriate rate and allowed to dry before being placed in storage. (Under normal storage conditions the treatment will remain effective for up to six months.) This will guard against the possibility of untreated fabrics being used to replace fabrics removed in the interval between routine sprays.

Treatment must be carried out to the satisfaction of an authorized officer of the appropriate government authority, who may then issue a certificate (see below) that becomes part of the documentation of the aircraft, and should be shown to health authorities together with the health part of the Aircraft General Declaration:

GOVERNMENT OF .....

**CERTIFICATE OF RESIDUAL  
DISINSECTION**

Interior surfaces, including cargo space, of this aircraft

..... were treated with permethrin on .....  
(aircraft registration) (date)

in accordance with the World Health Organization recommendation (*WHO Weekly Epidemiological Record* No. 7, 1985, p. 47 and No. 12, 1985, p. 90.)

The treatment must be renewed if cleaning or other operations remove a significant amount of the permethrin residue, and in any case within 4 weeks of the above date.

Expiry date: .....

Signed: .....

Designation: .....

Date : .....

Source: World Health Organization, *Weekly Epidemiological Record* 60(45):345-346. 1985.

## **D** RUG-RESISTANT GONORRHEA INFECTIONS IN CANADA

### **Plasma-mediated resistance**

The number of strains of penicillinase-producing *Neisseria gonorrhoeae* (PPNG) reported in Canada increased by 46% in 1984 (Table 1) as compared to the previous year. This represents the fourth consecutive year in which the number of PPNG cases has increased significantly. Most of the 1984 cases (80.3%) were reported from the provinces of Ontario and Alberta.

For the first time since surveillance was initiated in 1976, 48.1% of the infections for which a geographic origin could be ascertained were of Canadian origin (Table 2). In previous years, most infections were contracted abroad (e.g., 62.2% in 1983, 68.5% in 1982). Although the Far East continues to be the single area from which most PPNG strains are imported, it is notable that the number of strains imported from the Caribbean and Africa has increased substantially. In addition, the importation of PPNG from South America, primarily Guyana, has become more common.